



SmartSwitch 6A000 Installation and Setup Guide

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Part Number 04-0056-01 Rev. A
Order Number 9033005

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**Note**

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DECLARATION OF CONFORMITY ADDENDUM

Application of Council Directive(s): 89/336/EEC
73/23/EEC

Manufacturer's Name: Cabletron Systems, Inc.

Manufacturer's Address: 35 Industrial Way
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Product Name: SmartSwitch 6A000

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Conformance to Directive(s)/Product Standards: EC Directive 89/336/EEC
EC Directive 73/23/EEC
EN 55022
EN 50082-1
EN 60950

Equipment Type/Environment: Networking Equipment, for use in a Commercial or Light Industrial Environment.

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer:	Full Name:	Mr. Ronald Fotino
	Title:	Principal Compliance Engineer
	Location:	Rochester, NH. U.S.A.
Legal Representative in Europe:	Full Name:	Mr. J. Solari
	Title:	Managing Director - E.M.E.A.
	Location:	Newbury, Berkshire, England

SAFETY INFORMATION

CLASS 1 LASER TRANSCIEVERS

The IOM-29-4-MIX, IOM-29-4-IR, IOM-29-4-LR, IOM-39-1 and IOM-39-1-LR connectors use Class 1 Laser transceivers. Read the following safety information before installing or operating one of these modules.

The Class 1 Laser transceivers use an optical feedback loop to maintain Class 1 operation limits. This control loop eliminates the need for maintenance checks or adjustments. The output is factory set, and does not allow any user adjustment. Class 1 Laser transceivers comply with the following safety standards:

- 21 CFR 1040.10 and 1040.11 U. S. Department of Health and Human Services (FDA).
- IEC Publication 825 (International Electrotechnical Commission).
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization).

When operating within their performance limitations, laser transceiver output meets the Class 1 accessible emission limit of all three standards. Class 1 levels of laser radiation are not considered hazardous.

LASER RADIATION AND CONNECTORS

When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is -12.6dBm or 55×10^{-6} watts.

Removing the optical connector from the transceiver allows laser radiation to emit directly from the optical port. The maximum radiance from the optical port (under worst case conditions) is 0.8 W cm^{-2} or $8 \times 10^3 \text{ W m}^{-2} \text{ sr}^{-1}$.

Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, you must remove power from the network adapter.

FIBER OPTIC PROTECTIVE CAPS

**Warning**

READ BEFORE REMOVING FIBER OPTIC PROTECTIVE CAPS.

Cable assemblies and MMF/SMF ports are shipped with protective caps to prevent contamination. To avoid contamination, replace port caps on all fiber optic devices when not in use.

Cable assemblies and MMF/SMF ports that become contaminated may experience signal loss or difficulty inserting and removing cable assemblies from MMF/SMF ports.

Contamination can be removed from cable assemblies by:

1. Blowing surfaces with canned duster (Chemtronics p/n ES1270 or equivalent).
2. Using a fiber port cleaning swab (Alcoa Fujikura LTS p/n ACT-01 or equivalent) saturated with optical-grade isopropyl alcohol, gently wipe the end surface of ferrules first; then wipe down the sides of both ferrules.
3. Blow ferrule surfaces dry with canned duster.

Contamination can be removed from MMF/SMF ports by:

1. Using the extension tube supplied with canned duster, blow into the optical port, being careful not to allow the extension tube to touch the bottom of the optical port.
2. Reconnect cable and check for proper mating. If problems remain, gently wipe out optical port with a DRY fiber port cleaning swab and repeat step 1.

**Warning**

To avoid contamination, replace port caps on all fiber optic devices when not in use.

REGULATORY COMPLIANCE SUMMARY

SAFETY

The SmartSwitch 6A000 meets the safety requirements of UL 1950, CSA C22.2 No. 950, EN 60950, IEC 950, and 73/23/EEC.

EMC

The SmartSwitch 6A000 meets the EMC requirements of FCC Part 15, EN 55022, CSA C108.8, VCCI V-3/93.01, EN 50082-1, and 89/336/EEC.

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1 INTRODUCTION

Welcome to the SmartCell 6A000 Installation and Setup Manual. The SmartCell 6A000 ATM switch is a module that fits into the SmartSwitch 6000 chassis. You can install as many as five SmartCell 6A000 switches into a SmartSwitch 6000 chassis (using the 6C305-3 power supply). The module is hot swap-able, meaning that you can install and remove it without turning off or disconnecting the chassis.

This manual provides instructions for installing and setting up the SmartSwitch 6A000 ATM switch module.

This manual provides information about

- Unpacking and inspecting your switch module
- Installing your switch module in the SmartSwitch 6000 chassis
- Configuring your switch to be functional on your network
- Using the command line console
- Using the SmartSwitch ATM Administrator graphical network management software
- Obtaining customer support

This manual also provides detailed mechanical, electrical, and performance specifications for the SmartSwitch 6A000 ATM switch.



Note

For additional information about using the SmartSwitch 6A000, see the SmartSwitch ATM User Guide. For a complete explanation of all SmartSwitch 6A000 console commands, see the SmartSwitch ATM Switch Reference Manual.

2 SWITCH INSTALLATION

This chapter explains how to inspect and install your SmartSwitch 6A000 ATM switch module.

2.1 UNPACKING THE SWITCH

Remove the accessory carton from the SmartSwitch 6A000 shipping box. Carefully remove the switch from its packing material.

2.1.1 Accessory Carton Contents

Open the accessory carton and check that it contains the following items:

- 7-foot UTP cable, terminated on both ends with RJ-45 connectors
- RJ-45 to 9-pin female adapter (labeled PC)
- Console cabling instruction sheet
- CDROM containing the following:
 - SmartSwitch 6A000 operating firmware
 - SmartSwitch ATM switch documentation in Adobe Acrobat format
 - SmartSwitch ATM Administrator software
 - MIB files
 - SmartSwitch 6A000 Release Notes



Note If any of these items are missing, contact Cabletron Global Support Center immediately.

2.2 INSPECTING THE SWITCH

Depending on the configuration ordered, your switch looks similar to one of the units in the drawing in Figure 2-1. The 6A000-04, shown on the left, has four I/O modules. The 6A000-02, shown on the right, has two I/O modules; the empty I/O module positions are covered by metal blanks.

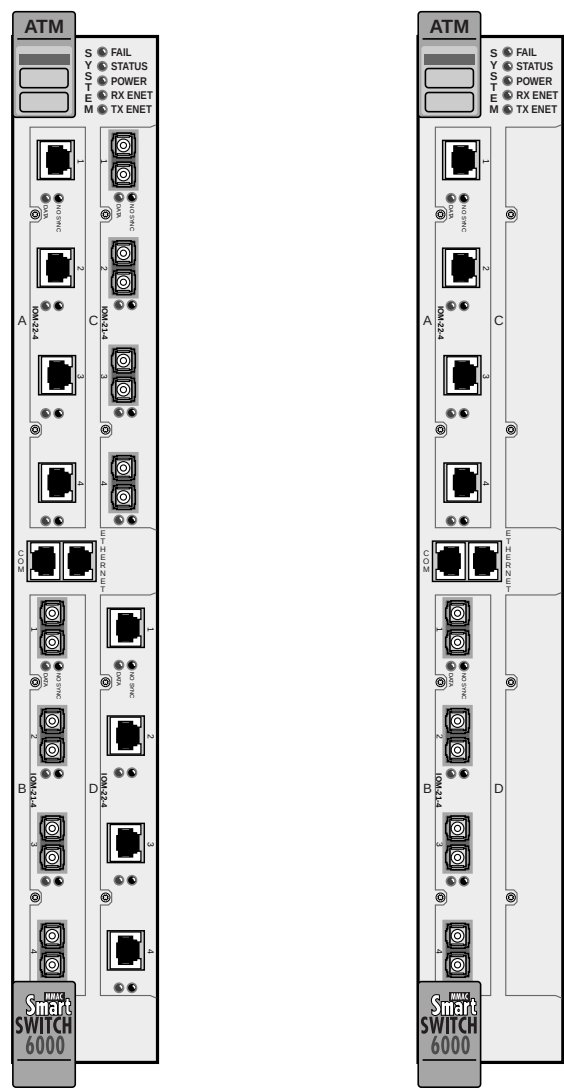


Figure 2-1 6A000-04 and 6A000-02 front panels

Inspect the switch and make certain that its configuration corresponds to what was ordered. Also, make certain that the input/output modules (IOMs) are of the correct type and number (See Table 2-1).

Table 2-1 I/O module ID numbers

Face Plate Number	Physical Specification
IOM-21-4	155 Mbps OC-3/STM-1, MMF/SC (4 port)
IOM-22-4	155 Mbps STS-3c/STM-1, UTP-5/RJ-45 (4port)
IOM-29-4-MIX	155 Mbps OC-3/STM-1, SMF-IR/SC (1port) MMF/SC (3 port)
IOM-29-4-IR	155 Mbps OC-3/STM-1, SMF-IR/SC (4 port)

Table 2-1 I/O module ID numbers (Continued)

Face Plate Number	Physical Specification
IOM-29-4-LR	155 Mbps OC-3/STS-1, SMF-LR/SC (4 port)
IOM-31-1	622 Mbps OC-12/STM-4, MMF/SC (1 port)
IOM-39-1	622 Mbps OC-12/STM-4, SMF-IR/SC (1 port)
IOM-39-1-LR	622 Mbps OC-12/STM-4, SMF-LR/SC (1 port)
IOM-67-4	45 Mbps DS-3, Coax/BNC (4 port)
IOM-77-4	34 Mbps E-3, Coax/BNC (4 port)



Note All Single-Mode fiber connectors on IOMs are blue.

If the switch hardware configuration is incorrect, contact Cabletron Global Support Center immediately.

2.3 INSTALLING THE SWITCH

The SmartSwitch 6A000 is hot swappable, meaning that you can install and remove it without turning off or unplugging the SmartSwitch 6000 chassis. You can install as many as five switch modules in each chassis (using the 6C205-3 power supply). In this configuration, the SmartSwitch 6A000 modules provide up to 75 user ports. Modules should be connected with inter-module trunks if traffic must cross between modules. Table 2-2 shows the maximum number of LAN and ATM switch modules that can be installed in a SmartSwitch 6000 chassis.

Table 2-2 SmartSwitch 6000 contents

Number of 6Exxx or 6Hxxx modules installed	0	1	2	3	4	5
Number of 6A000 modules that can be added	5	4	3	2	1	0



Note A single 6C205-1 power supply (the older version of the 6C205-3) can support only two SmartSwitch 6A000s within a SmartSwitch 6000 chassis. Three SmartSwitch 6A000s can reside within a SmartSwitch 6000 chassis that contains two 6C205-1 power supplies.

Follow the instructions below to install the switch module into the chassis. Refer to Figure 2-2.

1. Remove the metal blank that covers one of the empty slots in the chassis.
2. Open the ejectors at the top and bottom of the switch module.
3. With the LEDs at the top, align the top and bottom of the SmartSwitch 6A000 with the tracks in the slot.
4. Slide the switch into the chassis. The switch module obscures the view of the tracks at the bottom of the chassis, so be sure to look at that area as you begin to slide the switch into the chassis.
5. Close the ejectors. The installation is complete.

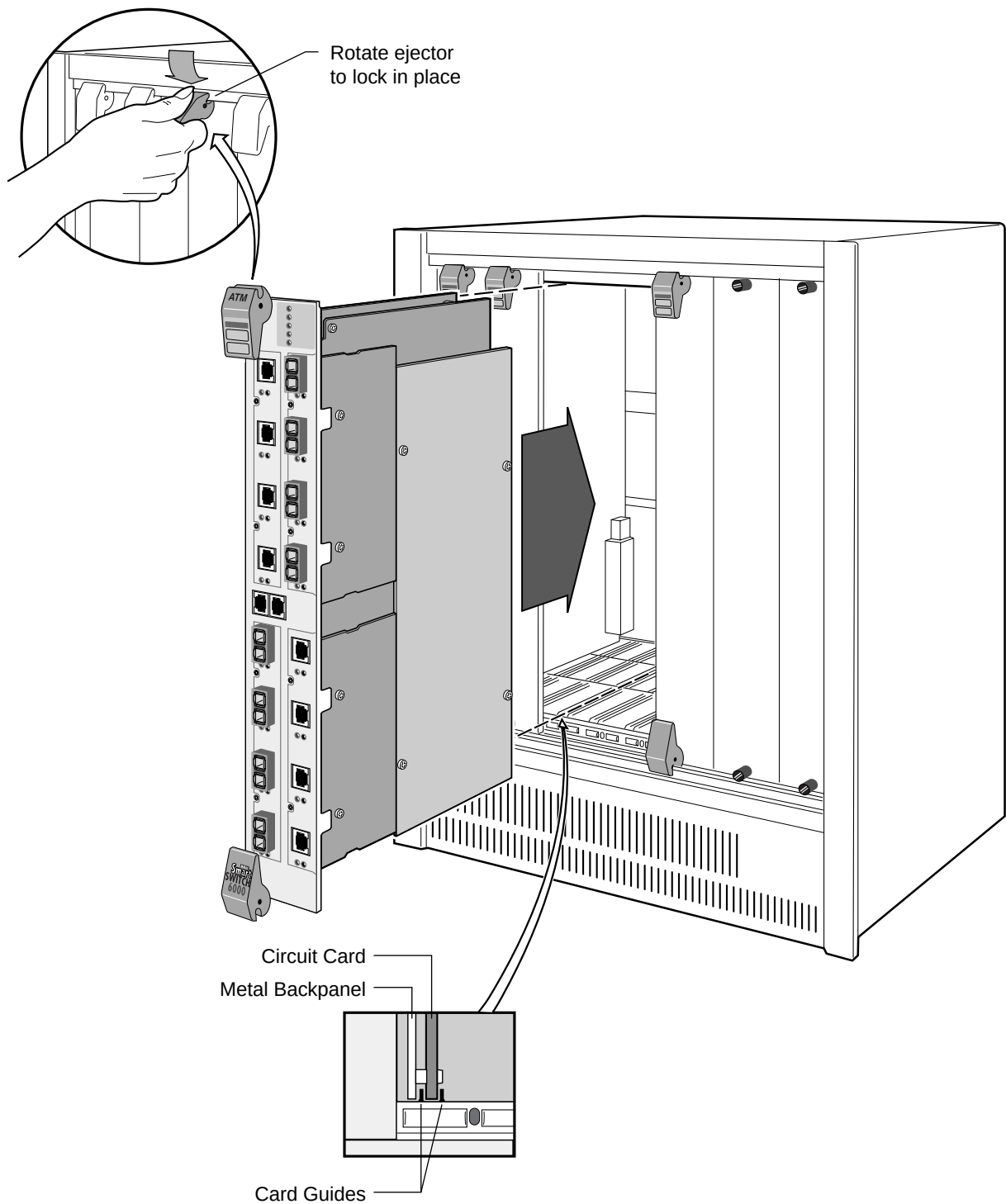


Figure 2-2 Installing the SmartSwitch 6A000

Proceed to Chapter 3, "Configuring the Switch."

3 CONFIGURING THE SWITCH

3.1 SWITCH CONFIGURATION

Initial configuration of your SmartSwitch 6A000 consists of setting the name of the switch, its Ethernet IP address, subnet mask, and default gateway. Once this is done, the switch is reachable for additional configuration and administration through its Ethernet interface.

Perform the following steps to configure initial switch parameters:

1. Configure a dumb terminal or workstation running terminal emulation software to use the following communication parameters:
 - Baud rate = 9600
 - Data bits = 8
 - Stop bits = 1
 - Parity = none
 - Flow Control = none



Note If you are using a PC or other workstation with a standard 9-pin serial port, install the supplied 9-pin serial port RJ-45 adapter on your workstation.

2. Plug one end of the supplied RJ-45 UTP cable into the 9-pin serial port RJ-45 adapter.



Note For information about serial port adapter wiring, see Chapter 5, "Specifications."

3. Plug the other end of the UTP cable into the SmartSwitch 6A000 female RJ-45 jack labeled Terminal (see Figure 3-1).
4. Connect the switch to your Ethernet network by plugging a UTP cable into the SmartSwitch 6A000 female RJ-45 jack labeled Ethernet (see Figure 3-1).

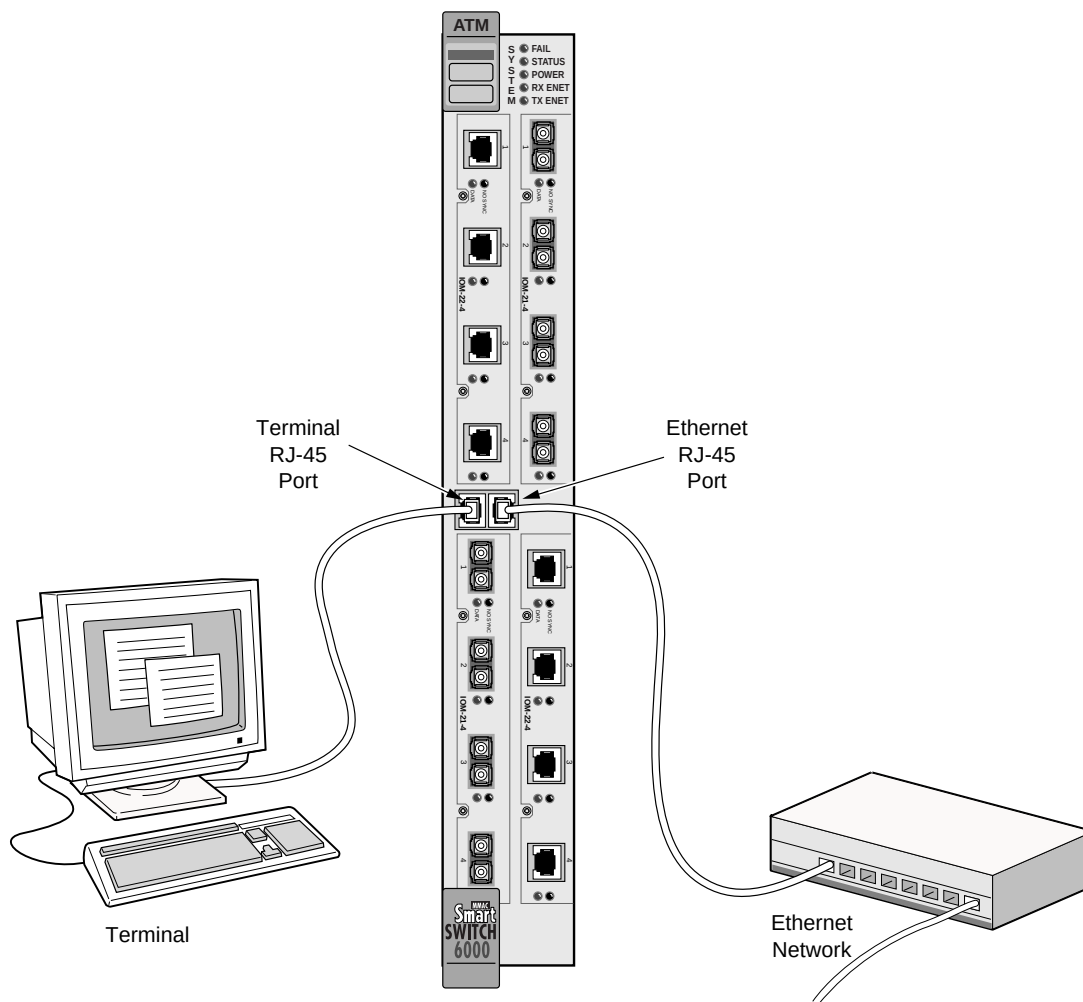


Figure 3-1 SmartSwitch 6A000 console and network connections

5. Start the dumb terminal or PC and its terminal emulation software; then turn on the SmartSwitch 6A000 switch.
6. As the SmartSwitch 6A000 powers up, a series of diagnostic messages appears on the terminal's screen.
7. After the diagnostics are finished, the switch prompts for a password. Enter the default password, **"admin."**
8. The switch prompts for the information necessary to make the switch accessible through your Ethernet network. Supply the following information:
 - Switch name
 - IP address
 - Subnet mask of the Ethernet network
 - Default Gateway on your Ethernet network

Once you enter these parameters and reboot the switch, you can log off the local console connection. You can perform all additional configuration over your Ethernet network using a telnet session.



Note Only one console connection is allowed at any time. To reach the SmartSwitch 6A000 through telnet, you must exit the local terminal connection by entering the **exit** command.

The following is an example of the initial configuration session. Note that your start up screen may look slightly different, but the same information is requested.

```
SmartSwitch 6A000 Version 2.3 (c) Cabletron Inc.
password:: admin                — “admin” is the default password
The current user is Administrator
Could not find setup file
Running Setup Automatically
SwitchName() : SmartSwitch      — a switch name
IPAddress(0.0.0.0) : 210.160.77.254 — an IP address
IPNetMask(255.0.0.0) : 255.255.255.0 — a subnet mask
Default Gateway ( ) : 210.160.77.1 — address of the default gateway
Confirm(y/n)?:y
Changing IP Address on System. Telnet session (if any) will be lost.
SmartSwitch #
```

3.1.1 Backup Configuration

Backup configuration consists of setting up the SmartSwitch 6A000 to save configuration backup files. The backup configuration file contains all configuration changes made to the switch. For example, the backup file contains ELAN information, port configuration changes, PVCs, filters, and so on.



Note The backup file does not contain an image of the switch operating firmware. For information on upgrading or replacing switch firmware, see the SmartSwitch ATM User Guide.

Perform the following steps to configure backup capabilities.

1. On a workstation that can be reached by your SmartSwitch 6A000 and is running TFTP server software, create a file under the /tftpboot directory. This file is used as the backup file by the SmartSwitch 6A000, and can initially be blank.
2. Make sure that the SmartSwitch 6A000 has full read/write privileges to the file.
3. Enter the **backup switch** command on the SmartSwitch 6A000. Specify the IP address of the TFTP server and the full path and file name to the backup file. For example:

```
SmartSwitch # backup switch
ServerIP()                : 206.61.237.40      — IP address of the backup TFTP server
Path(public/Smart6A000.ztr) : /tftpboot/backup.ztr — full path and file name

SmartSwitch #
```



Note Depending upon whether your TFTP server is running in secure or non-secure mode, you may not need to specify `/tftpboot` in the path to the backup file. If you experience *access violation* errors, try leaving off `/tftpboot` from the path.



Note It's a good idea to backup the SmartSwitch 6A000 each time you make a permanent or significant change to the switch's configuration.

Once the SmartSwitch 6A000 configuration is backed up, you can restore the configuration by entering the **restore switch** command. For example:

```
SmartSwitch # restore switch
ServerIP(206.61.237.40)      : — Remembers last IP address entered
Path(tftpboot/backup/smart6A000.ztr) : — Remembers last path and file name entered
```

Backup file is valid.

Restoring a backup file will completely replace any data stored in the flash, and requires a switch reboot

```
Are you sure this is what you want to do?
Confirm(y/n)?y                — Yes, restore the configuration
```

```
Restoration complete.
Rebooting is required to ensure correct operation,
Do you want to reboot now?
Confirm(y/n)?y                — Yes, reboot the switch
```

3.2 USING THE CONSOLE

Use the SmartSwitch 6A000 console interface to configure and manage your switch. The following is a description of the console interface and its operation.

3.2.1 Port Numbering

The SmartSwitch 6A000 is capable of containing both physical and virtual ports. The following conventions are used for numbering ports on the SmartSwitch 6A000.

Physical Ports

Physical ports are numbered according to the following convention:

I/O module letter port number

For example, port 3 of I/O module A on the TSM in slot 5 is represented by: **A5**

Virtual Ports

Virtual ports are designated by a period (.), and the virtual port number is appended to the physical port number. For example, virtual port 2 on physical port **A5** is represented as: **A5.2**

3.2.2 Console Commands



Note For detailed descriptions of all console commands, see the SmartSwitch ATM Switch Reference Manual.

All console commands use the syntax:

operator switch-attribute [<parameter 1> <parameter 2>... <parameter n>]

Where the operator is one of the following:

show (display): Show the current values used by a switch-attribute.

add (create): Add a new instance of a switch-attribute.

delete (remove): Delete an instance of a switch-attribute.

modify (set): Change the values that currently define a switch-attribute.

start: Start a process on the switch; for example, start the LAN Emulation Configuration Server.

restart: Restart a process on the switch; for example, restart a client.

flush: Remove assigned values; for example, flush a route table.

alias: Create easier names for often-used commands and their parameters.

Entering parameters at the command line is optional. If a command requires parameter values, it prompts you for them. For instance, in the example below, **show** is the operator, **portconfig** is the switch-attribute, and **a1** is the parameter indicating that you want to show configuration information about port **A1**.

```
SmartSwitch # show portconfig a1
```

```
=====
Port Name   : A1
Trans Type  : STS-3c
Media Type   : MMF (S)
-----
Parameters      Configured      Current
-----
Sig Type         autoConfig    autoConfig
Sig Role         other          other
Interface Type   private        private
Max Vpi Bits     0              0
Max Vci Bits     12             12
Max Svc Vpci     0              0
Min Svc Vci      32             32
Max Vccs         4096           4096
Max Svp Vpci     0              0
Max Vpcs         0              0
ILMI State       Admin State up  Oper State down
Port State       Admin State up  Oper State down
Port Bandwidth   Max 150.00 MBS  Used 0.00 MBS
```

```
SmartSwitch #
```

If you don't specify parameters with the command, the console prompts you for an input value and provides a default value displayed in parenthesis. For example, if you enter **show portconfig** without specifying a port (as a parameter), the following appears. Here, the default of "**all**" ports is presented. You can either accept the default by pressing **Enter**, or you can enter a specific port number. Taking the default (**all**), displays the following:

```
SmartSwitch # show portconfig
```

```
PortNumber(ALL) : — We accept the default, "Show all ports."
```

Port Name	Intf Type	Sig Type	ILMI State	Trans Type	Media Type	Max Bw(MBS)	Used Bw(MBS)	Oper State
A1	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
A2	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
A3	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
A4	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
B1	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
B2	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
B3	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
CPU	private	uni40	down	STS-3c		155.52	11.13	up
CPU.1	private	pnni10	down	STS-3c		11.13	0.00	up
C1	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
C2	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
C3	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
C4	private	autoConfig	down	STS-3c	MMF (S)	150.00	0.00	down
D1	private	autoConfig	down	DS3	Coax	40.70	0.00	down

```
More(<space>/q)?:
```



Note

When you accept the (**all**) default for **show**, the information displayed is often abridged.

3.2.3 Console Time-out

The console can be configured to exit if it does not sense a key stroke within a defined length of time. By default, the SmartSwitch 6A000 is set to never time-out (value = 0). To activate the time-out feature, use the **set ConsoleTimeOut** command to adjust the time-out period:

```
SmartSwitch # set consoletimeout
Timeout(0) : 30 —Will time-out in 30 minutes without input
Confirm (y/N)? : y
SmartSwitch #
```

3.2.4 Creating an Alias

Use the **add alias** command to create shorter or easier-to-remember names for command lines. For example:

```
SmartSwitch # add alias
AliasName() : traffic
AliasedString() : set switchtrafficcongestion
SmartSwitch #
```

The above example creates an alias (**traffic**) that you can enter in place of the command **set SwitchTrafficCongestion**. For example:

```
SmartSwitch # traffic
Queue1EFCIThreshold(4096) :
Queue2EFCIThreshold(4096) :
Queue3EFCIThreshold(4096) :
Queue4EFCIThreshold(4096) :
LowEPDWatermark(10922) :
HighEPDWatermark(21845) :
RMCellMarkingEnable(1) :
EFCIMarkingEnable(1) :
SmartSwitch #
```

Enter the **show alias** command to display a list of all defined aliases and the command lines to which they correspond.

```
:SmartSwitch # show alias
AliasName(ALL) :
Alias List
=====
Index Alias Name : Aliased Command
1 PING : Start ping
2 xxx : show portconfig
3 traffic : set switchtrafficcongestion
SmartSwitch #
```

3.2.5 Ambiguous Commands

If you enter part of a command and that part is not unique, the console displays a numbered list of possible matching commands. For example, entering **show pnnin** is ambiguous because there are several commands that start with “pnnin.” In response, the SmartSwitch 6A000 displays a list of the possible commands:

```
SmartSwitch # show pnnin      — “pnnin” is ambiguous
Objects beginning with pnnin for action show
0  :   PnniNeighbor
1  :   PnniNetworkLink
2  :   PnniNetworkNode
3  :   PnniNode
4  :   PnniNodeTimer
( # ) Command ( Q ) uit? : 3      — I meant PnniNode, so I enter number three (3) from the list
SmartSwitch # show PnniNode
```

Selecting number three from the list automatically enters the corresponding command; pressing **Enter** executes the command:

```
PNNI Node Information
=====
Level          : 80
Node Id        : 50:a0:39:00:00:00:00:00:00:00:28:c1:80:00:20:d4:28:c1:80:00
Lowest         : TRUE
Admin Status   : UP
Oper Status    : UP
Atm Address    : 39:00:00:00:00:00:00:00:00:00:28:c1:80:00:20:d4:28:c1:80:00
Peer Group Id  : 50:39:00:00:00:00:00:00:00:00:00:00:00:00:00:00
Rst Transit    : FALSE
Rst Branching  : FALSE
DB Overload    : FALSE
Ptse           : 2
SmartSwitch #
```

3.2.6 Console Help

The console provides several levels of help for console commands. For example, to list the switch attributes that can be used with a particular operator, enter the word **help** (or **?**) followed by the operator. For example, to see all the attributes that are affected by the **add** operator, enter the following:

```
SmartSwitch # help add
HELP ---- add

=====
add      [ Alias | ATMRoute | BUSELAN | Community | ELAN | IPATMClient |
          IPATMPVC | LANEClient | LECSELAN | LECSELANLEC |
          LECSELANNameTable | LECSELANPolicy | LECSPacketSizes | LECSTLVSET
          | LESELAN | NetPrefix | PnniMetrics | PnniNode |
          PnniSummaryAddress | PnniTnsRoute | Port | PVC | PVP | Route |
          ServiceRegistry | TrafficDescriptor | TrapCommunity ]

SmartSwitch #
```

To obtain an explanation of a command and its parameters, enter the word help (or ?) before the command.

```
SmartSwitch # ? add laneclient
```

```
Create LANE Client
```

```
=====
ClientNumber      Local Client Number (0-127)
LanName           Name of the ELAN to join
ServerType        Type of LANE Server [LECS, LES]
ServerAddress     ATM Address of the LANE Server
IPAddress         IP Address of the Client
NetMask           IP Netmask of the Client
MTU               MTU for the Client [1516, 9234, NONE]
SmartSwitch #
```

While entering a command, you can obtain help about the current parameter by entering a question mark (?) at the prompt. For example:

```
SmartSwitch # add atmroute
```

```
PortNumber(A1)      : a3
AtmAddress()        : 39:00:00:00:00:00:00:00:00:00:14:72:80
PrefixLength(104)   :
Index(0)            :
Type(Internal)       : ? — We want help on this
The type of reachability. Use Internal, Exterior, or Reject.
Type(Internal)       : exterior
Scope(0)            :
MetricsTag(0)        :
SmartSwitch #
```



Note To back out of any command, press the **Esc** key before entering the last value.



Note For complete information about using your SmartSwitch ATM switch, see the SmartSwitch ATM User Guide.

4 ATM ADMINISTRATOR

4.1 INTRODUCTION

SmartSwitch ATM Administrator is a graphical network management application designed for managing SmartSwitch ATM switches. SmartSwitch ATM Administrator runs on both Windows 95/98 and on Solaris. The SmartSwitch ATM Administrator provides many capabilities that are not available from the console interface. For example,

- Show graphic views of your switches and their connections
- Identify connections between switches
- Display physical topology of your ATM network
- Display PNNI peer group and domain topology of your ATM network
- Configure switch connections and ELANs using drag-and-drop operations
- Manage all ATM switches from one console
- Perform transactions across multiple switches (for example, create an ELAN when the LANE servers are not co-located)
- List and sort all connections, virtual connections, ports, modules, and other switch information



Note Capabilities that are not available from the SmartSwitch ATM Administrator are debugging and tracing.

Figure 4-1 through Figure 4-3 show examples of features provided by SmartSwitch ATM Administrator.

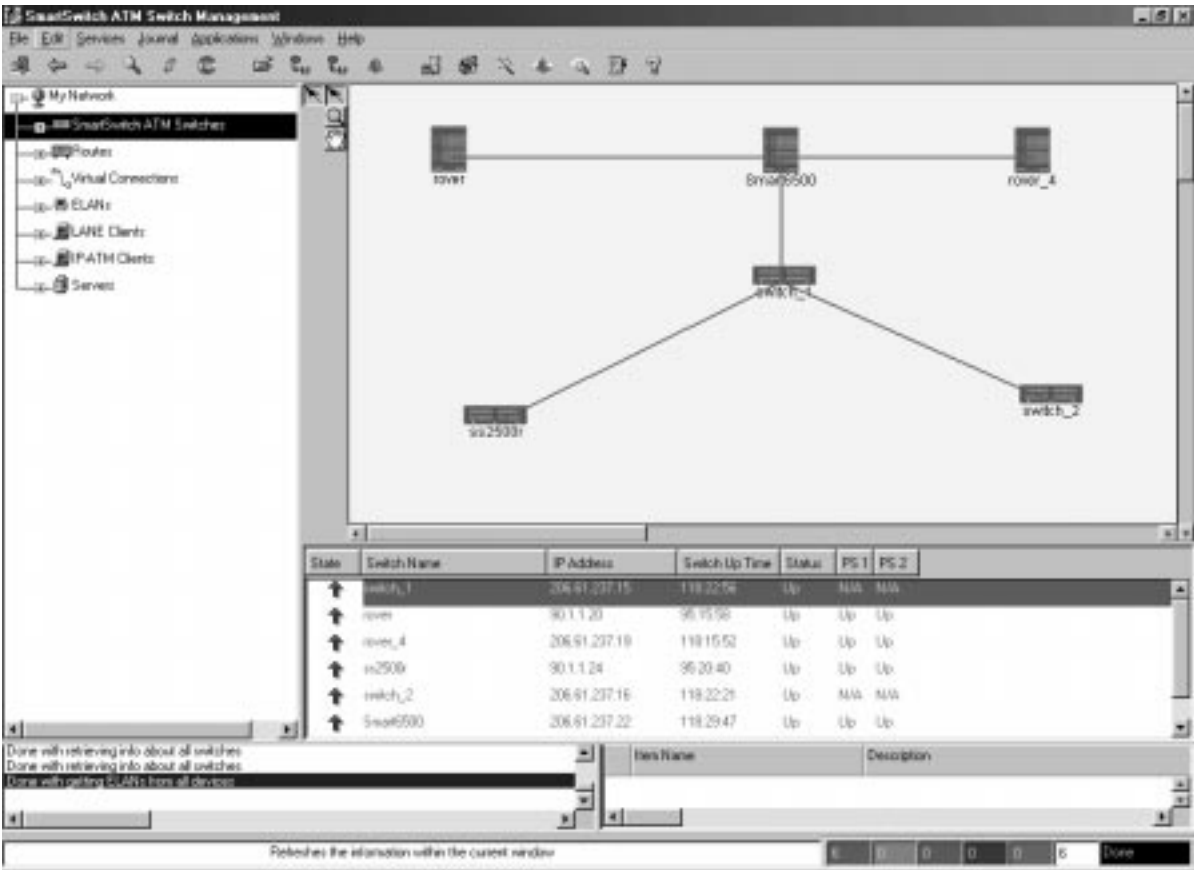


Figure 4-1 ATM Administrator physical topology view

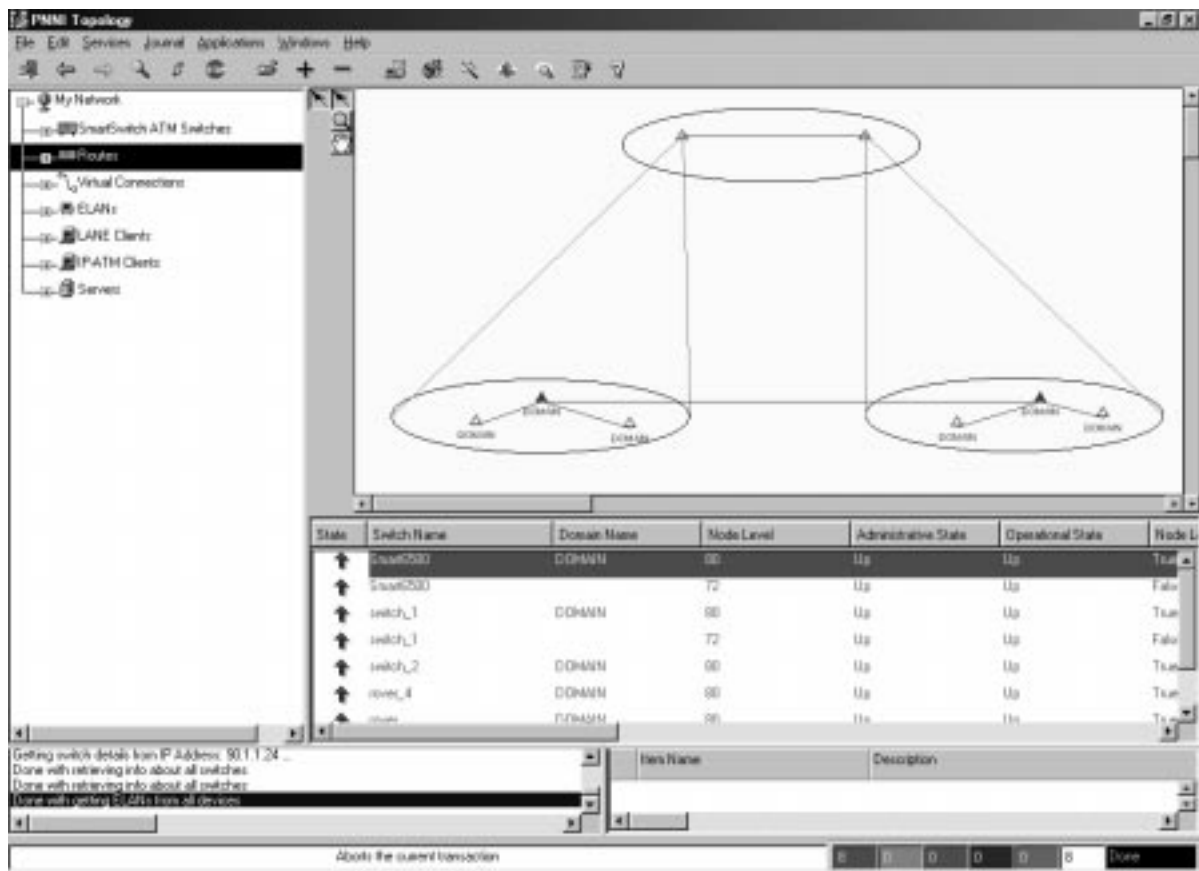


Figure 4-2 ATM Administrator PNNI topology view

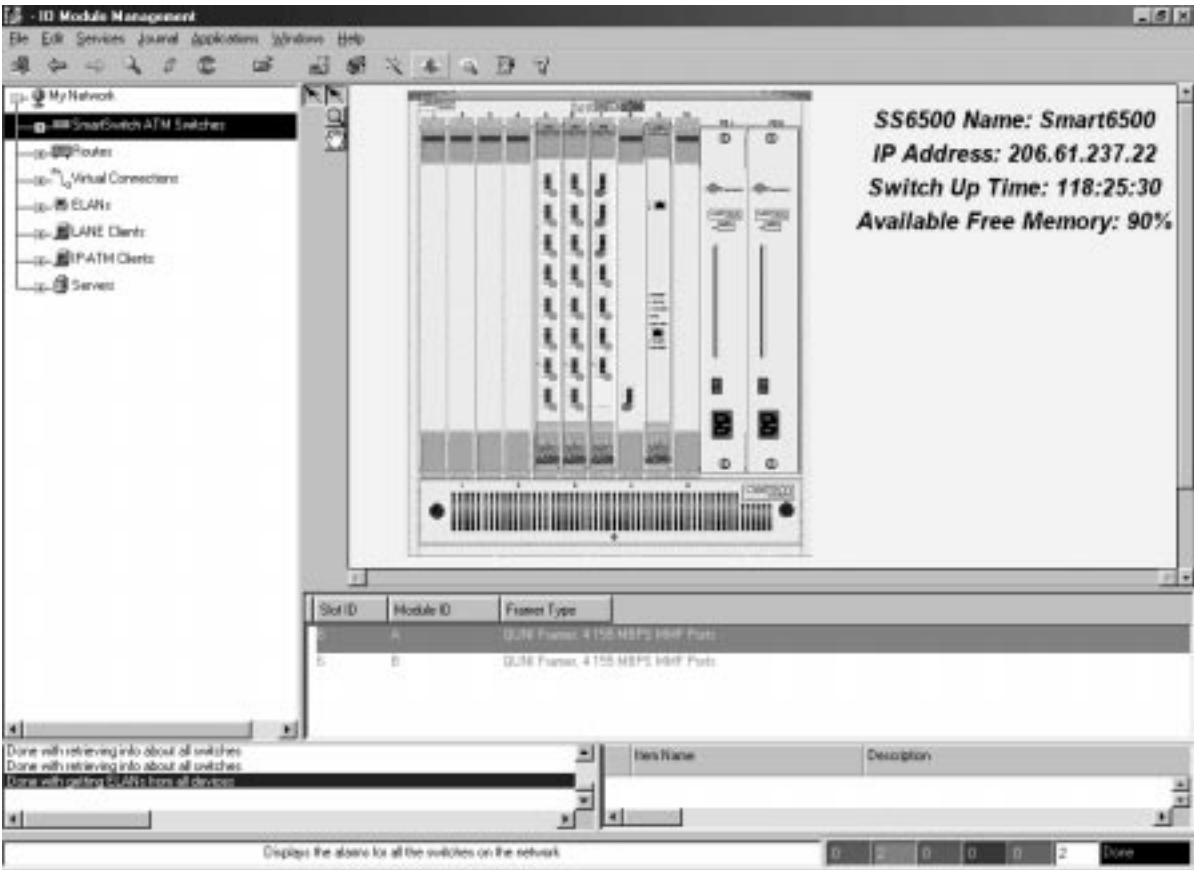


Figure 4-3 View of individual switch in network

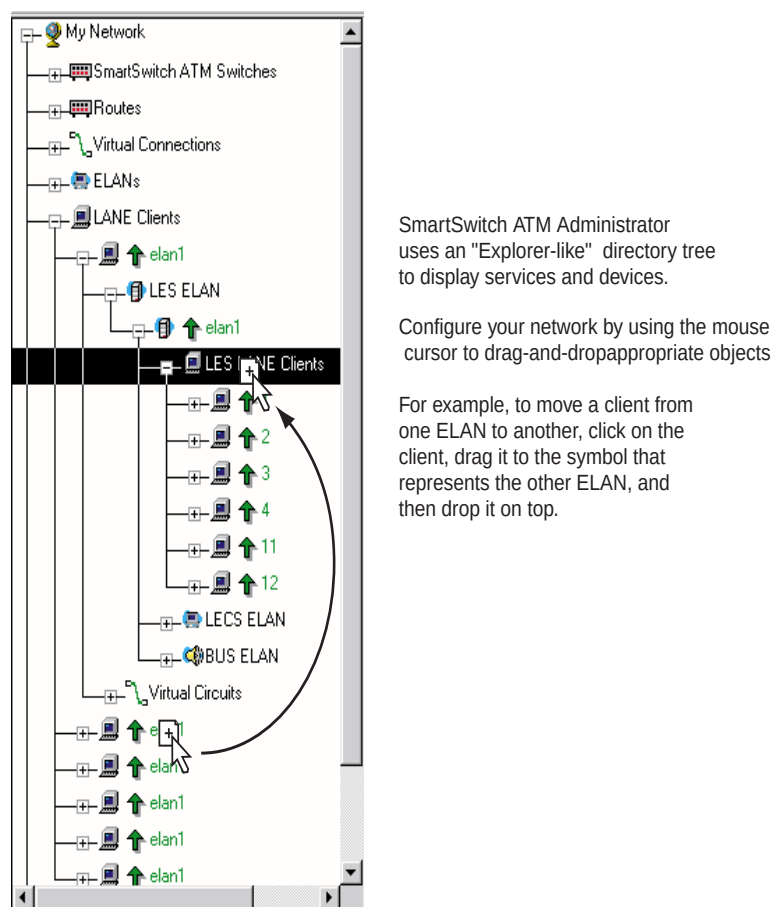


Figure 4-4 ATM Administrator drag-and-drop capability

4.2 STARTING ATM ADMINISTRATOR

When you use SmartSwitch ATM Administrator for the first time, you should change the default passwords to prevent unauthorized access to the application. SmartSwitch ATM Administrator arrives with two user accounts set up. These accounts are described in Table 4-1.

Table 4-1 Default accounts and passwords

User Name	Default Password	Privilege Level
admin	admin	Administrator
guest	guest	Guest (Cannot affect changes.)

Changing ATM Administrator Password

1. In the SmartSwitch ATM Network Management Tools program group, double click on the icon labeled SmartSwitch ATM Administrator. The SmartSwitch ATM Administrator Login dialog box appears.
2. Enter the default user name, **admin**. The user name is case sensitive.
3. Enter the default password, **admin**, and click the **OK** button or press **Enter**. The password is case sensitive.
4. The SmartSwitch ATM Administrator window appears. On the *Applications* menu, select *User Management*. This opens the *User Account Management* dialog box. Use this dialog box to add/remove users and change passwords.

4.3 MANAGING YOUR ATM NETWORK

SmartSwitch ATM Administrator can connect to your ATM switches through either the switch's Ethernet interface or through a direct ATM connection to one of the ATM switches. In the later case, your NMS workstation must contain an ATM network adapter card.

Using an ATM adapter to reach your ATM network is the preferred type of connection for ATM Administrator. Using ATM to connect to your ATM network avoids issues related to maintaining a parallel Ethernet network. ATM assures that all switches are reachable, and that all switches can reach important services such as the TFTP and BootP servers. Using ATM also removes the need to create and keep track of special Ethernet routes that may be needed for connectivity (see "Ethernet Connectivity").

4.3.1 ATM Connectivity

Connecting the NMS workstation to your network through an ATM network adapter card is the easiest way to manage your ATM network. To set up ATM Administrator to use ATM, create an ELAN that is dedicated to network management (named "NMS", for instance). Then, make all ATM switches and the NMS workstation clients of this ELAN (see Figure 4-5). Using this special ELAN for network management not only assure that ATM Administrator can reach all ATM switches, it also provides a certain amount of security because all network management activity occurs on its own subnet.

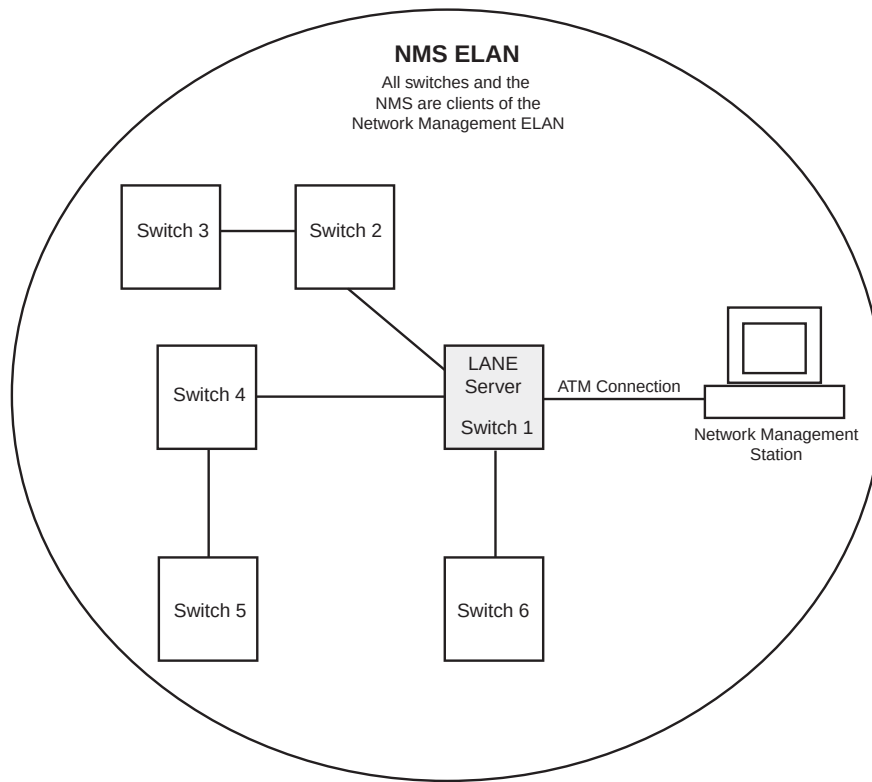


Figure 4-5 ATM Administrator connected through NMS-specific ELAN

Ethernet Connectivity

If you decide to use an Ethernet adapter in your NMS workstation, SmartSwitch ATM Administrator can manage your ATM switch network through each switch's Ethernet interface. However, depending on your network's topology, managing through Ethernet may pose connectivity challenges.

For example, in figure Figure 4-6, two ATM switches are displayed as generic switch icons (gray boxes, identified by the IP address of their LANE client). In this case, each of these generic switches are not connected to the Ethernet network, but are connected to the other switches through ATM only. Ethernet connected switches adjacent to the generic switches inform ATM Administrator of the existence of the generic switches. However, because the generic switches are not connected to the Ethernet network, the NMS cannot reach these devices, and ATM Administrator cannot communicate with them to find out what they are.

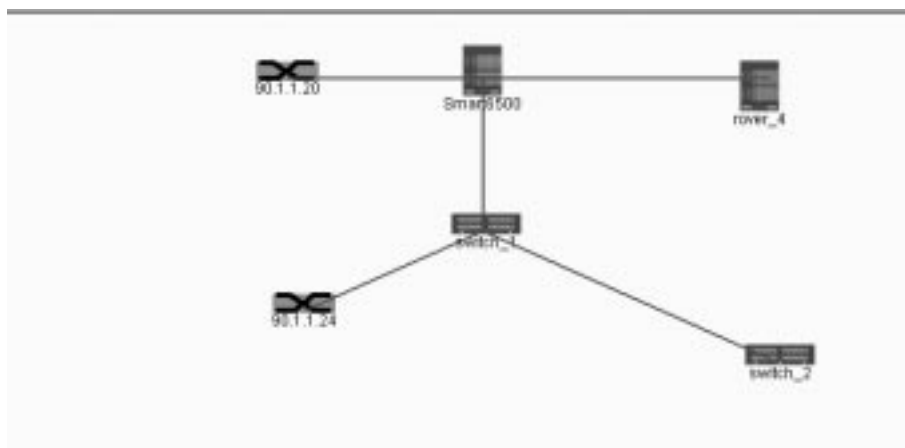


Figure 4-6 Switches that ATM Administrator cannot reach through Ethernet

Figure 4-7 is a diagram of the ATM and Ethernet connectivity of the network map shown in Figure 4-6. Notice that the generic switches, 90.1.1.20 (Switch 4) and 90.1.1.24 (Switch 5), are not connected to the Ethernet network. As a result, switches 4 and 5 do not have direct access to the NMS, and the NMS (using an Ethernet connection) does not know how to reach the subnet 90.0.0.0, which is Switches 4 and 5's ELAN.

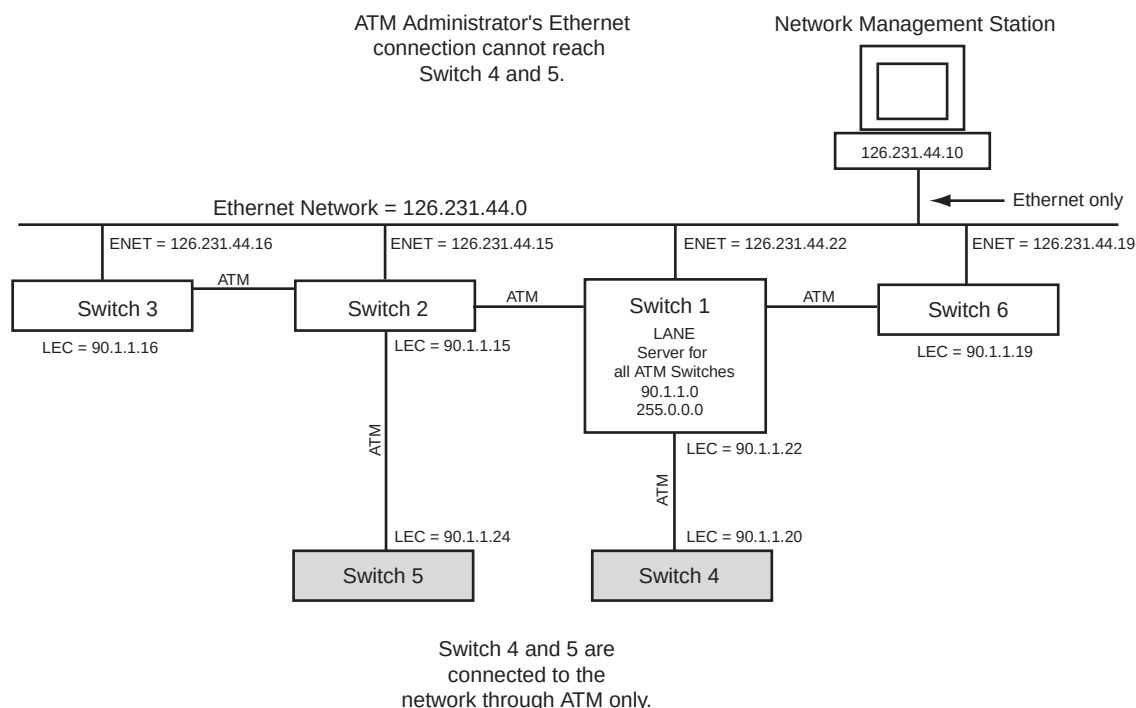


Figure 4-7 Ethernet connected ATM Administrator

This connectivity problem can be fixed by creating routes between the NMS and the non-Ethernet connected switches:

1. Add a route on the NMS that specifies the gateway to 90.0.0.0 as the Ethernet interface of a switch that has connectivity to both Ethernet and the ATM ELAN.

2. Add routes on Switches 4 and 5 that specify the LANE client of their adjacent switches as the gateway to the Ethernet network (126.231.44.0 in this example).



Note All switches specified as gateways must have connectivity to both the Ethernet and ATM networks.

For instance, in Figure 4-8, after the route is added to the NMS, a route must be added to Switch 4 that specifies Switch 1's LANE client as the gateway to the Ethernet network. To add the route on Switch 4, use the **add route** console command:

```
SmartSwitch # add route
DestNetIP()           : 206.61.237.0
GatewayIP()           : 90.1.1.22 — Switch 1's LANE client
```

SmartSwitch #

Similarly, a route must be added to Switch 5 that specifies Switch 2's LANE client as the gateway to the Ethernet network:

```
SmartSwitch # add route
DestNetIP()           : 206.61.237.0
GatewayIP()           : 90.1.1.15 — Switch 2's LANE client
```

SmartSwitch #

To see the new route, enter the **show route** command. As an example, we do this on Switch 4:

```
SmartSwitch # show route
```

ROUTE NET TABLE

destination	gateway	flags	Refcnt	Use	Interface
90.0.0.0	90.1.1.20	1	0	0	zn5
206.61.237.0	90.1.1.22	3	0	0	zn5 — Switch 4's new route to Ethernet network

ROUTE HOST TABLE

destination	gateway	flags	Refcnt	Use	Interface
127.0.0.1	127.0.0.1	5	0	0	lo0

SmartSwitch #

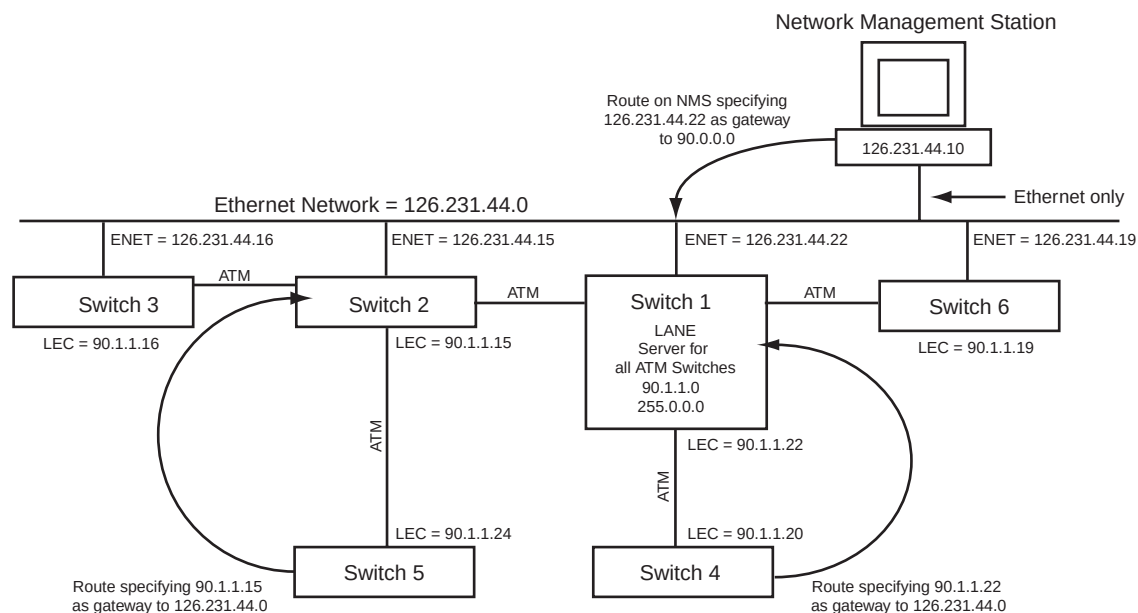


Figure 4-8 Routes that allow connectivity between ATM and Ethernet

Once these routes are added, the NMS running ATM Administrator and the switches connected only through ATM can now reach each other. The switches now appear on the ATM Administrator map as known devices, and can be managed.

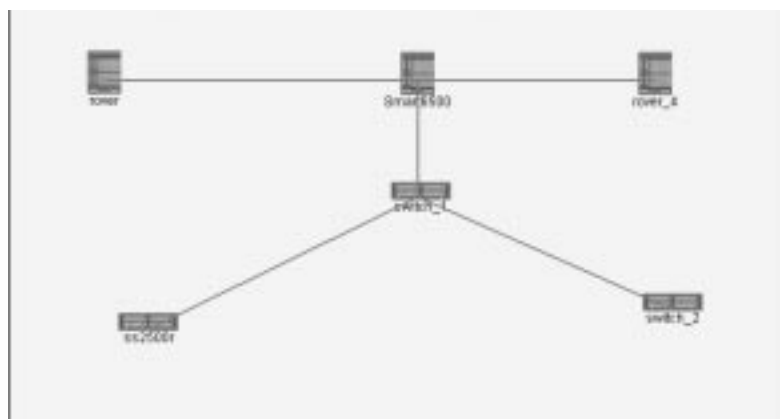


Figure 4-9 Routes allow Switches 4 and 5 to be managed

4.3.2 Accessing Online Help

All SmartSwitch ATM Administrator operations are documented within the application's online help. Follow these instructions to access the on-line help facility (see Figure 4-10).

1. From the *Help* menu, select *SmartSwitch ATM Administrator Help Topics*.
2. The *Help Topics* dialog box appears. You have three options for viewing online help:

- Click the *Contents* tab to show the *Table of Contents* of the online help. Click on the topic you wish to read about.
- Click the *Index* tab to select from an alphabetical list of help topics.
- Click the *Find* tab to search for a particular topic.

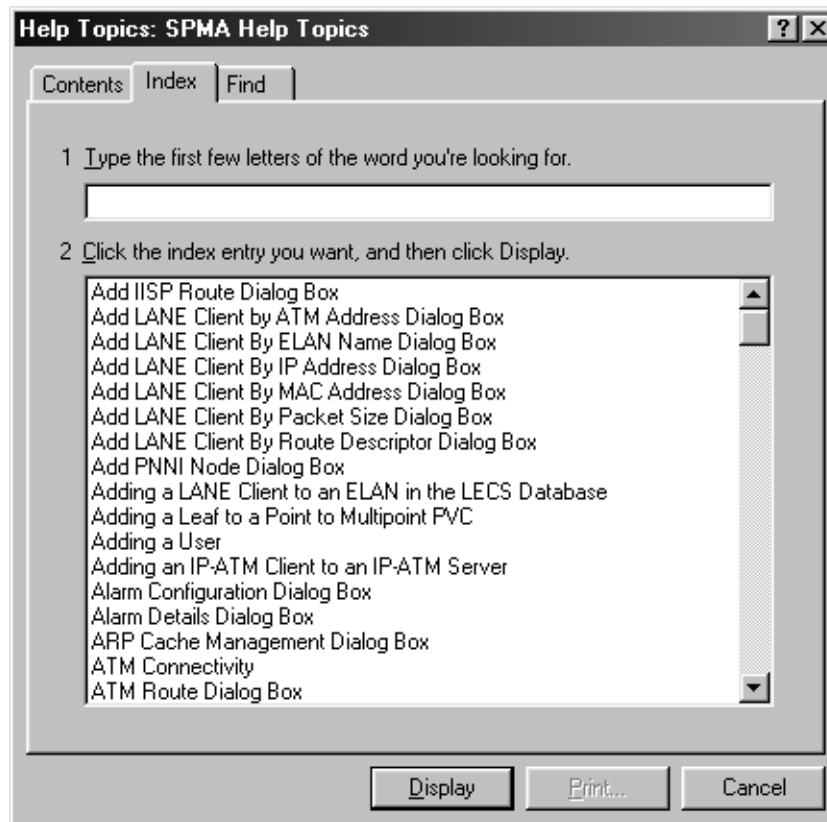


Figure 4-10 ATM Administrator Help Topic dialog box

5 SPECIFICATIONS

This chapter contains SmartSwitch 6A000 ATM switch module firmware, hardware, technical, and physical specifications.

5.1 FRONT PANEL

This section describes the meaning of the SmartSwitch 6A000 module LEDs (see Table 5-1). Figure 5-1 illustrates the front panel of the SmartSwitch 6A000 module.

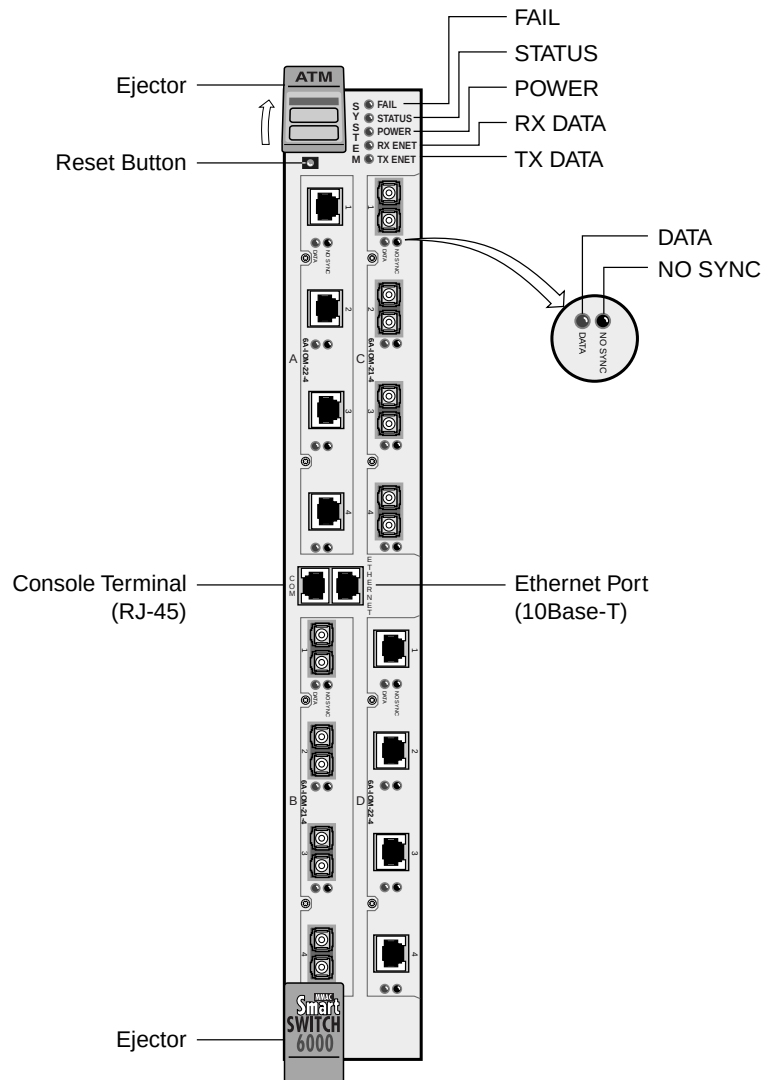


Figure 5-1 Front panel of 6A000 switch module

Table 5-1 Front panel LEDs

LED	Function
FAIL (red)	Normally OFF; ON indicates CPU failed.
STATUS (amber)	Normally OFF; ON indicates an error condition that prevents alarm information from being displayed to the console.
POWER (green)	Normally ON; OFF indicates the CPU is not receiving power from the power supply.
RX DATA (green)	Normally FLASHING intermittently if there is receive activity on the port; indicates the Ethernet port is up and receiving Ethernet frames.
TX DATA (green)	Normally FLASHING intermittently if there is transmit activity on the port; indicates the Ethernet port is up and transmitting Ethernet frames.



Note The 'MON' and 'DIAG' functions are not used in this release.

5.2 TECHNICAL SPECIFICATIONS

Table 5-2 Hardware Specifications

Specification	Value
Processor	i960CF, 33 MHz
Switching engine	2.5 Gbps, non-blocking
Max I/O ports	7 for 6A000-02; 15 for 6A000-04
Switch latency	10 microseconds
CPU DRAM memory	32 MB
Buffer memory (cells)	32 K
flash memory	8 MB
Serial port	RS-232c compliant; RJ-45 connector
Ethernet port	IEEE 802.3 compliant; RJ-45 connector

Table 5-3 Physical Specifications

Specification	Value
Dimensions	41.9 cm x 6.1 cm x 28.6 cm 16.5" x 2.4" x 11.25"
Product weight (with max I/O modules)	3.6 kg 8 lbs
Power requirements (typical)	5V, 19 amps at chassis power bus (fully loaded)
Power dissipation (typical)	1,008,000 BTU/s (95 watts) (fully loaded)
Operating temperature	15 to 40 C (41 to 104 F)
Operating humidity	5% to 90% RH, non-condensing

Table 5-4 ATM Port Specifications

Media	Port Speed	Framing	Connector	Max. Tx Power	Min. Tx power	Max. Rx power	Min. Rx power	Range
SMF-IR	155 Mbps	STS-3c or STM-1	SC	-8 dBm	-15 dBm	-8 dBm	-31 dBm	15 Km
SMF-IR	622 Mbps	STS-12c or STM-4	SC	-8 dBm	-15 dBm	-7 dBm	-28 dBm	15 Km
SMF-LR	155 Mbps	STS-3c or STM-1	SC	0 dBm	-5 dBm	-8 dBm	-34 dBm	40 Km
SMF-IR	622 Mbps	STS-12c or STM-4	SC	+2 dBm	-3 dBm	-7 dBm	-28 dBm	40 Km
MMF	155 Mbps	STS-3 or STM-1	SC	-14 dBm	-19 dBm	-14 dBm	-31 dBm	2 Km
MMF	622 Mbps	STS-12c or STM-4	SC	-14 dBm	-20 dBm	-14 dBm	-26 dBm	500 m
Cat. 5 UTP	155 Mbps	STS-3c or STM-1	RJ-45	--	--	--	--	100 m
75 ohm coax	44.7 Mbps	DS-3 nonchannelized	BNC, female	n/a	n/a	n/a	n/a	150 m to DSX
75 ohm coax	34.3 Mbps	E-3 nonchannelized	BNC, female	n/a	n/a	n/a	n/a	150 m to DSX

Table 5-5 Protocols Standards and Specifications

Protocol	Standard
Signaling	ATM Forum UNI 3.0 ATM Forum UNI 3.1 ATM Forum UNI 4.0 ATM Forum ILMI 4.0
ATM routing protocols	IISP PNNI 1.0 (including PGL and border node support) UNI
LAN protocols	ATM Forum LANE 1.0 (Ethernet and Token Ring) IETF RFC 1577 Classical IP over ATM LUNI 2.0 LNNI

Table 5-6 Management Standards and Specifications

Management Protocol	Supported MIBs
SNMPv2c	MIB II (RFC 1213)
See SmartSwitch ATM User Guide for SNMP and MIB details	Interface Table MIB (RFC 1573) AToM MIB (RFC 1695) AToM2 MIB LANE MIB (ATM Forum) ILMI 4.0 MIB (ATM Forum) IP over ATM MIB PNNI MIB SmartSwitch ATM Switch MIBs (proprietary)

Table 5-7 RJ-45 to DB-9 Adapter (PC Serial Port Adapter)

RJ-45 Pin	RJ-45 Color	DB-9 Pin	DB-9 Description
1	Blue	2	Receive
4	Red	3	Transmit
5	Green	5	Ground

APPENDIX A TECHNICAL SUPPORT

This appendix tells you what to do if you need technical support for your SmartSwitch 6A000 ATM switch.

Cabletron offers several support and service programs that provide high-quality support to our customers. For technical support, first contact your place of purchase. If you need additional assistance, contact Cabletron Systems, Inc. There are several easy ways to reach Cabletron Customer Support and Service.

A.1 TELEPHONE ASSISTANCE

Our Technical Support Center is available Monday through Friday, 8am to 8pm Eastern Time, by calling 603-332-9400.

A.2 FAX SERVICE

You can fax support questions to us any time at 603-337-3075.

A.3 ELECTRONIC SERVICES

You can contact Cabletron's Bulletin Board Service by dialing 603-335-3358.

Our internet account can be reached at support@ctron.com.

You can also check our home pages on the World Wide Web.

- <http://www.Cabletron.com>
- <http://www.ctron.com>

A.4 PLACING A SUPPORT CALL

To expedite your inquiry, please provide the following information:

- Your Name
- Your Company Name
- Address
- Email Address
- Phone Number
- FAX Number
- Detailed description of the issue (including history, what you've tried, and conditions under which you see this occur)

- Hardware model number, software version, and switch configuration (that is, what part types are in what slots)

A.5 HARDWARE WARRANTY

Cabletron warrants its products against defects in the physical product for one year from the date of receipt by the end user (as shown by Proof of Purchase). A product that is determined to be defective should be returned to the place of purchase. For more detailed warranty information, please consult the Product Warranty Statement received with your product.

A.6 SOFTWARE WARRANTY

Cabletron software products carry a 90-day software warranty. During this period, customers may receive updates and patches for verified, reported software issues.

A.7 REPAIR SERVICES

Cabletron offers an out-of-warranty repair service for all our products at our Santa Clara Repair Facility. Products returned for repair will be repaired and returned within 5 working days. A product sent directly to Cabletron Systems, Inc. for repair must first be assigned a Return Material Authorization (RMA) number. A product sent to Cabletron Systems, Inc., without an RMA number displayed outside the box will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, contact the Cabletron Technical Support. When you call for an RMA number, your support representative will spend a few minutes with you, making sure the board is defective. Once they confirm the board is defective, they will assign an RMA number. Payment, shipping instructions, and turnaround time will be confirmed when the RMA number is assigned.